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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/638,485	08/14/2000	Charles J. Jacobus	IMM-00607/03	1266

7590 03/27/2003

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EXAMINER

SMITH, TYRONE W

ART UNIT PAPER NUMBER

2837

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/638,485

Applicant(s)

JACOBUS ET AL.

Examiner

Tyrone W Smith

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-45 and 62-76 is/are allowed.
- 6) ☒ Claim(s) 46, 47, 49-55 and 57-60 is/are rejected.
- 7) ☒ Claim(s) 48, 56 and 61 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 17.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 46, 47, 49-55 and 57-60 rejected under 35 U.S.C. 102(b) as being anticipated by Ruoff, Jr (4278920).

Regarding Claims 46, 47, 49, 53, 54, 55, 57, 58, 59 and 60. Ruoff discloses a method and apparatus for generating position or path control programs using force feedback, which includes a motor (Figure 1 item 16 and Figure 2 item 16) coupled to the manipulandum/manipulator (Figure 1; column 3 lines 56-68 and column 4 lines 1-10), position sensor (Figure 1 item 22 and Figure 2 item 22) coupled to the manipuladum/manipulator (column 3 lines 65-68 and column 4 lines 1-10), a transformation unit (Figure 2 #50) and a command store unit (Figure 2 item 44). The transformation unit receives signals from the rotational/position sensor and the force sensor (Figure 2 item 42) representing the force exerted along the axis. The command store receives input information from the transformation unit and decodes commands from the information, read the force values (column 8 lines 27-45), outputs position data, determines a force feedback effect (detent) to contribute to output of the force feedback system (column 2 lines 32-68, column 3 lines 1-35, column 8 lines 46-53), outputs a force feedback value based on the determined force contribution to cause a force based on the force feedback value (refer to Figure 1-3), and outputs to the comparator (Figure 2 #46/ motor and the then to the workpiece manipulator. The transformation unit and the command store unit

can be both the mediated-controller and the memory unit. Applicant should note that in the area of motor control systems, particularly in the area of robotics, user manipulation (joystick, push button, or the like) is used frequently.

Regarding Claims 50 and 52. Ruoff system uses a plurality of signals/pointers and position data, from the transformation unit and position/force sensor, to determine a force feedback effect to contribute to output of the force feedback system (column 2 lines 32-68, column 3 lines 1-35, column 8 lines 46-53) which is calculated in the command store.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 51 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruoff, Jr (4278920) in view of Sugimoto et al (4621332).

Ruoff discloses a method and apparatus for generating position or path control programs using force feedback, which includes a motor (Figure 1 item 16 and Figure 2 item 16) coupled to the manipulandum/manipulator (Figure 1; column 3 lines 56-68 and column 4 lines 1-10), position sensor (Figure 1 item 22 and Figure 2 item 22) coupled to the manipuladum/manipulator (column 3 lines 65-68 and column 4 lines 1-10), a transformation unit (Figure 2 #50) and a command store unit (Figure 2 item 44). The transformation unit receives signals from the rotational/position sensor and the force sensor (Figure 2 item 42) representing the force exerted along the axis. The command store receives input information from the transformation unit and decodes commands from the information, read the force values (column

8 lines 27-45), outputs position data, determines a force feedback effect (detent) to contribute to output of the force feedback system (column 2 lines 32-68, column 3 lines 1-35, column 8 lines 46-53), outputs a force feedback value based on the determined force contribution to cause a force based on the force feedback value (refer to Figure 1-3), and outputs to the comparator (Figure 2 #46/ motor and the then to the workpiece manipulator. The transformation unit and the command store unit can be both the mediated-controller and the memory unit. Applicant should note that in the area of motor control systems, particularly in the area of robotics, user manipulation (joystick, push button, or the like) is used frequently. However, Ruoff does not disclose a means for calculating the manipuladum velocity from the position data and incorporate the velocity in the determination of the force contribution.

Sugimoto discloses a method and apparatus for controlling a robot includes a counter (Figure 3 item 28) receives robot position signals then is sent to the position/attitude calculation unit (Figure 3 item 40). Position signals from the position/attitude calculation unit are sent to the velocity calculation unit (Figure 3 item 70). The velocity is incorporated in the system in determination of the force contribution (column 3 lines 31-68 and column 4 lines 1-34).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Ruoff's method and apparatus for generating position or path control programs using force feedback with Sugimoto's method and apparatus for controlling a robot. The advantage of combining the two would provide a robot, which can cope with various work conditions by merely changing control parameters without changing a tool.

4. Claims 48, 56 and 61 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art(s) of record does not disclose a force feedback effect comprises an attribute, wherein the attribute consists in combination a stiffness attribute, damping attribute, force attribute and distance attribute. Further, the use of a switch for disabling the output force.

5. Claims 19-45 and 62-76 in condition for allowance.

6. The following is an examiner's statement of reasons for allowance: The prior art(s) of record does not the system processes and installed force feedback effect to determine a force contribution from the installed force feedback effect and outputting a force feedback value based on the determined force contribution to cause a force based on the force feedback value to be outputted by the actuator to the user of the force feedback system. Further, outputting a from the actuator to manipuladum of a force feedback effect wherein the maximum peak force is related to the maximum power so the actuator can be utilize instantaneously and reducing the output of the maximum peak force to an output of a nominal peak force from the actuator when the power utilized by the actuator exceeds an average power level over a predetermined period of time, wherein the nominal peak force is related to a maximum power that the actuator can utilize in continuous steady-state operation.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyrone W Smith whose telephone number is 703-306-5987. The examiner can normally be reached on weekdays from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi, can be reached on (703) 308-3370. The fax phone number for the organization where this application or proceeding is assigned is 703-308-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Tyrone Smith

Art Unit 2837


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